Hybrid Electric Vehicle Energy Management System

Abstract

A vehicle location sensor such as a GPS, an inertial navigation or dead reckoning system determines location data for a vehicle that travels from a known first destination to a second destination. This location data is processed by a route computer system, and associated vehicle driving patterns are stored in memory. Measured vehicle locations, possibly in combination with stored driving pattern information, are used to anticipate a likely second destination and a likely associated driving pattern from a current location of the vehicle to the likely second destination. The anticipation of a destination or a driving pattern can be responsive to associated likelihoods based upon previous vehicle behavior, which likelihoods can be also dependent upon the time of day, day of week or date. A power generator and an energy storage device of a hybrid electric vehicle are controlled responsive to the anticipated likely driving pattern, and possibly responsive to information from environment sensors. In one embodiment, a recuperated turbine engine power generator is shut off in advance of

reaching an anticipated destination so as to recover latent heat energy from a regenerator, wherein the recovered energy can be either stored in the energy storage unit or used to drive a traction motor of the hybrid electric vehicle.